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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,766	07/27/2001	Gordon Taylor Davis	RAL920010015US1	8533

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EXAMINER	
TRAN, NGHI V	
ART UNIT	**PAPER NUMBER**
2151	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/916,766	DAVIS ET AL.	
	Examiner	Art Unit	
	Nghi V Tran	2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *7 and 16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-21* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *07/27/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

Claims 6 and 15 in species A, an address is added to the first plurality of address.

Claims 7 and 16 in species B, an address is deleted to the first plurality of address.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1 and 10 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Cockburn, Joscelyn, at telephone number (919) 543-9036 on September 8, 2004 a provisional election was made with traverse to prosecute the invention of species A, claims 1-6, 8-15, and 17-21. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7 and 16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2, 4-5, 8-9, 10-11, 13-14, and 17-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Masanori et al., JP 2000-358064 (hereinafter Masanori).

Taking claim 1 as an exemplary claim, Masanori teaches a system for finding a longest prefix match for a key in a computer network, the system comprising:

- a main engine for storing a first plurality of addresses and for searching the first plurality of addresses for the longest prefix match for the key, none of the first plurality of addresses being a prefix for another address of the first plurality of addresses (paragraph 8, page 2 of 5 and item 1 of figure 1); and
- an auxiliary engine for storing and searching a second plurality of addresses, a first address of the second plurality of addresses capable of including the prefix for a second address of the first plurality of addresses or for a third address for the second plurality of addresses, none of the first plurality of addresses being the prefix for any of the second plurality of addresses, each of the second plurality of addresses being distinct from each of the first plurality of addresses (paragraph 9 and 10, page 3 of 5 and item 2 of figure 1).

With respect to claim 2, Masanori further teaches each of the first plurality of addresses has a first length, each of the second plurality of addresses has a second

length and wherein the key is capable of having a maximum length, the first length being at least a particular portion of the maximum length (paragraph 9, page 3 of 5).

With respect to claim 4, Masanori further teaches the maximum length is thirty-two bits and wherein the first length is sixteen bits (paragraph 18, page 4 of 5).

With respect to claim 5, Masanori further teaches the auxiliary engine searches the second plurality of addresses only if the longest prefix match is not found in the main engine (paragraph 11, page 3 of 5).

With respect to claim 8, Masanori further teaches the main engine is a direct table having a plurality of table addresses and wherein each of the plurality of table addresses includes a tree (figures 5-6 and paragraph 14, page 4 of 5).

With respect to claim 9, Masanori further teaches the tree is a Patricia tree (paragraph 15, page 4 of 5).

Claims 10-11, 13-14, and 17-21 are also rejected for the same reason set forth in claims 1-2, 4-5, and 8-9.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 3, 6, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masanori as applied to claims 1-2, 4-5, 8-9, 10-11, 13-14, and 17-21 above, and further in view of Masanori, et al., JP 2000-332786 (hereinafter Kohei).

Taking claim 3 as an exemplary claim, Masanori fails to teach the main engine does not search the first plurality of addresses if an actual length of the key is less than the particular portion of the maximum length. In a system for finding a longest prefix match for a key in a computer network, Kohei discloses teach the main engine does not search the first plurality of addresses if an actual length of the key is less than the particular portion of the maximum length (paragraph 16 and figure 4). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Masanori in view of Kohei by skipping the main engine's search. The motivation for doing so would have been obvious because skipping the main engine's search reduces the delay in searching.

Taking claim 6 as an exemplary claim, Masanori fails to teach a new address is added to the first plurality of addresses. In a system for finding a longest prefix match for a key in a computer network, Kohei discloses a new address is added to the first plurality of addresses if the new address is not the prefix of any of the first plurality of addresses and the new address has a length that is greater than a particular length or if the new address has a length that is greater than a particular length, a particular address of the first plurality of addresses is a prefix of the new address and the length of the new address is greater than an address length of the particular entry (paragraph 10, page 1 of 3 and figures 4-5). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Masanori in view of Kohei by adding a new address to the first plurality of addresses. The motivation for doing so

would have been obvious because adding new address to the first plurality of addresses reduces the memory quantity.

Claims 12 and 15 are also rejected for the same reason set forth in claims 3 and 6.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. "Address routing using address-sensitive mask decimation scheme," by Hunter et al., U.S. Patent Number 6,223,172.

b. "High speed routing using compressed tree process," by Tzeng, U.S. Patent Number 6,067,574.

c. "Method for IP routing table look-up," by Tzeng, U.S. Patent Number 6,061,712.

d. "Method and apparatus for performing internet network address translation," by Bal et al., U.S. Patent Number 6,457,061.

e. "Packet relaying apparatus and high speed multicast system," by Akahane et al., U.S. Patent Number 6,778,532.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi V Tran whose telephone number is (571) 272-4067. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarni Maung can be reached on (571) 272-3939. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nghi V Tran
Examiner
Art Unit 2151

NT

ZARNI MAUNG
PRIMARY EXAMINER